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Patron-driven Acquisition and Monopolistic Use: Are Patrons at Academic Libraries
Using Library Funds to Effectively Build Private Collections?

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ABSTRACT: The library literature on collection development has recently seen a spate of publications and presentations on patron-driven acquisitions (PDA). The bulk of this literature has addressed the implementation and touted the successes of PDA at academic libraries, yet a counter literature has been developing, much of it addressing the potential failings of library patrons as selectors. There has been little focus, however, on patrons' potentially problematic behaviors as post-purchase users of PDA materials. This study aimed to discover whether library patrons might in effect be monopolizing print books purchased via PDA via circulation renewals. The study found that there was a statistically significant difference in the proportions of circulated and circulated-and-renewed books acquired via PDA, librarians' orders, and approval plan selection. The study also found that ratios of renewals to circulations for circulated-and-renewed approval plan books were significantly greater than were the ratios for librarians' and PDA books, generally, and for books available for more than one year but less than six years. There were no significant differences for books available for one year or less. PDA books' renewal-to-circulation ratios were significantly greater than those of approval plan books only for books that had circulated a single time.

KEYWORDS: patron-driven acquisition, collection use, print books, academic libraries, patron behaviors

INTRODUCTION

It has been variously referred to in the library literature devoted to collection development as books on demand, buy not borrow, collaborative collection development, demand-driven acquisitions, direct purchase, just-in-time acquisitions, just-in-time purchasing, on-demand acquisitions, patron-driven acquisitions, patron-initiated acquisitions, patron-initiated collection development, patron-initiated purchase, point-of-need acquisitions, purchase express, purchase-on-demand, reader-driven acquisitions, user-driven acquisitions, and user-initiated collection development (Alder, 2007; Allison, 2013; Clendenning, 2001; Dillon, 2011b; Emmert, 2004; Levine-Clark, 2011b; Miller, 2011; Nixon, Freeman, & Ward, 2010; Paulson, 2011; Pitcher, Bowersox, Oberlander, & Sullivan, 2010; Polanka & Delquié, 2011; Reel & Conn, 2010; Thompson, 2010; Tyler, 2011; Walker, 2012; Waller, 2013; Ward, 2002; Way, 2009). Regardless of the nomenclature, it is safe to say that patron-driven acquisitions (henceforth, PDA) has generated a great deal of interest and some enthusiasm in academic libraries and a correspondingly large amount of literature (Medeiros, 2012; Tyler, 2011; Waller, 2013; Wood, 2013). Lugg noted in 2011 that PDA “has become one of the most discussed ideas in the world of library collections” (p. 7). That same year, Walker somewhat rhetorically inquired whether PDA had reached a tipping point in U.S. academic libraries (Walker, 2012). A small number of enthusiasts have gone so far as to advocate that PDA programs become their libraries’ primary method of collection development or be expanded as far as is possible (Jones, 2011; Levine-Clark, 2011a; Levine-Clark, 2011b; Spitzform, 2011; Spitzform & Sennyey, 2007).

What is PDA? Several working definitions have been proffered in the literature, but the definition provided by Ward (2012) in her guide to implementing and managing PDA may serve the best in its general applicability: “Patron-driven acquisitions (PDA) refers to a formal plan or program where librarians develop criteria for selecting books that will be bought based on patrons’ requests or use” (p. 1). As Ward and others have noted, the purchase of print materials may be triggered by interlibrary loan (ILL) requests or by allowing patrons to request items via vendor records loaded into libraries’ catalogs (Allison, 2013; Ward, 2012). With electronic book (e-book) PDA programs, e-books may have pro-rated

short-term loans or purchase triggered by patrons' interactions with the e-books based on pre-set use or access triggers (Allison, 2013; Badics, 2012; Crane & Snyder, 2013; Dahl, 2013; Dillon, 2011b; Dinkins, 2012-2013; Fisher, Kurt, & Gardner, 2012; Herrera, 2012; Hruska, 2012; Mays, 2012; McLure & Hoseth, 2012; Medeiros, 2011; Reno, 2012-2013; Shepherd & Langston, 2013; Swords, 2011; Ward, 2012; Way & Garrison, 2011; Wiley & Clarage, 2012). As numerous authors have noted, and as can be inferred from Ward's definition, PDA potentially upends the traditional librarian/patron power structure where collecting and control over expenditure of the collection budget are concerned (Alder, 2007; Allison, 2013; Barnhart, 2010; Corbett, 2011; Dahl, 2012; Duncan & Carroll, 2011; Fisher, Kurt, & Gardner, 2012; Fyfe et al., 2012; Hodges, Preston, & Hamilton, 2010; Hruska, 2012; Lenares & Delquíé, 2010; Lugg, 2011; Macicak & Schell, 2009; Medeiros, 2011, 2012; Miller, 2011; Polanka & Delquíé, 2011; Reiners et al., 2012; Reno, 2012-2013; Riley, 2010; Schroeder, Wright, & Murdoch, 2010; Sens & Fonseca, 2013; Sharp & Thompson, 2010; E.S. Smith, 2011; S.A. Smith, 2011; Thompson, 2010; Waller, 2013; Walters, 2012). Lugg (2011) has called PDA a game-changer in the world of library collections and has discussed it at length as a disruptive technology.

As one might expect with a technology or technique that disturbs the library status quo, PDA has elicited concern among librarians, and much of this concern has centered on the potential failings of patrons as book selectors and on the several undesirable outcomes these failings might produce. Librarians' apprehensions about PDA have included: PDA books will be of too narrow interest and will therefore not circulate, patrons will spend wildly, patrons will unbalance or skew collections, and so forth. The literature review to follow will demonstrate that many of these concerns have received some attention in the literature of collection development. However, the authors of this study have found nothing that addresses the belief that PDA patrons will monopolize the books they have requested/purchased. The authors believe that it may be worthwhile to begin to remedy this dearth in the literature with a study of PDA books purchased at the University of Nebraska-Lincoln (UNL).

Unfortunately, UNL University Libraries' policies governing patron privacy hinder the authors from exploring directly whether individual patrons have monopolized PDA books through the mechanism

of repeated circulations or through circulations with repeated circulation renewals. Thus, the following study will be limited to discovering whether the books' circulation records reveal that PDA books show a greater propensity toward being renewed and whether PDA books have received excessive circulation renewals, as compared to books acquired via more traditional avenues, i.e., approval plans' selections and librarians' orders.

Before proceeding, it would be worthwhile to provide a working definition of terms and to address a likely objection to the authors' approach. The study will be employing "monopolize" and "monopolistic" in their common, conversational sense: "to obtain exclusive possession of; keep entirely to oneself" (Monopolize, 2014). In essence, the study will attempt to see whether PDA books are being hogged, as compared to approval plan selected and librarian ordered books. This immediately raises the question of circulation recalls, for if the books in question may be recalled, then, strictly speaking, no actual monopolization of the books can occur, assuming that the borrowing patrons do not defy the recalls and refuse the rather sizeable resultant fines. The authors must concede that this is, technically, the case, but the authors would counter that the circulation recall objection privileges theory and neglects actual practice. In theory, UNL library patrons desiring a circulated book could request that it be recalled from its borrower. In actual practice, the books in question could be recalled, but they would not be immediately available to the patrons initiating the recalls. In fact, the recall-initiating patrons would be required by library policy to wait 10-14 days, depending upon circumstances, before the borrowing patrons would be compelled to return the recalled books. As one might expect, UNL Libraries' recall policies therefore likely have served as a barrier to the service's use, and in fact the service was not popular nor heavily used and was, in the period subsequent to this study, discontinued in favor of the UNL Libraries' more responsive and timely ILL services (Michael Straatmann, Circulation Manager, UNL University Libraries, personal communication, January 7, 2014). Thus, the reader may approach the study to follow as one of monopolistic use in observed effect, rather than in pure fact. Academic libraries with more aggressive recall policies could, presumably, see different patron behaviors.

REVIEW OF LITERATURE

PDA, beyond simply upending the librarian/patron power dynamic in collection development, presents the possibility of a myriad of problematic patron behaviors and resultant undesirable outcomes. Critics and supporters both have noted that PDA patrons request print books or access e-books whose utility, both to themselves and to their collections, is unknown, so there is a strong possibility that the purchased/accessed books will not meet their needs or that their needs did not require a purchase (Hussong-Christian & Georgen-Doll, 2010; Kuhn, 2004; Medeiros, 2011; Rottmann, 1991; Teaff, 2011). As a result, patrons could be left dissatisfied by their books or by the service itself.

The literature suggests that PDA critics who have worried that patrons will not appreciate the service or will not find their requested/purchased books worthwhile need not have worried. The literature that has addressed these questions shows that patrons have overwhelmingly supported the programs, felt that the books were useful, or felt that the books were good additions to their libraries' collections (Alder, 2007; Anderson et al., 2010; Barnhart, 2010; Bertuca et al., 2009; Brug & MacWaters, 2004; Chan, 2004; Clendenning, 2001; Comer & Lorenzen, 2007; Coopey & Snowman, 2006; Foss, 2007; Hussong-Christian & Georgen-Doll, 2010; Reel & Conn, 2010; Reynolds et al., 2010; Schmidt, 2012; Ward, 2002, 2011; Ward, Wray, & Debus-López 2003; Wiley & Clarage, 2012). Perhaps some of the most in-depth research into patron satisfaction has been conducted at Oregon State University (OSU). Patrons surveyed by Hussong-Christian and Goergen-Doll favored OSU's PDA program, and the majority indicated that they would borrow their books again, would recommend them to colleagues, or would add them to reading lists. The open feedback portion of the survey indicated that 61.8% of patrons' comments were unqualifiedly positive and a mere 2.9% were purely negative (2010).

Other cautionary voices in the library literature have noted that patrons place ILL requests without first having consulted their libraries' catalogs or having assessed the adequacy of their libraries' holdings, which could result in ordering unnecessary or redundant books (Booth & O'Brien, 2011; Brug & MacWaters, 2004; Houle, 2004; Ingold, 2004; Richey, 2010; Watson, 2004; Wiley & Chrzastowski, 2010). In regard to ILL requests for locally held items or making requests without first consulting the

library catalog, the ILL and PDA literatures provide evidence that patrons pose a small threat to libraries wishing to avoid duplicate or unnecessary purchases. Yontz, Williams, and Carey (2000) have demonstrated that patrons make a noteworthy number of ILL requests for locally owned items. Ingold (2004) has reported that 24% of students and 20% of faculty at her institution failed to consult the catalog prior to initiating ILL requests. Several PDA authors similarly have noted that small numbers or percentages of PDA requests at their institutions were for duplicate titles (Allen, Ward, Wray, & Debus-López, 2003; Blackburn & Tiemeyer, 2013; Bombeld & Hanerfeld, 2004; Booth & O'Brien, 2011; Brug & MacWaters, 2004; Herrera & Greenwood, 2011; Houle, 2004; Macicak & Schell, 2009; McCaslin, 2013; Pitcher et al., 2010; Sridhar, 1983; Wiley & Chrzastowski, 2010; Wiley & Clarage, 2012).

Several librarians have worried that patrons will deplete library monies through PDA and will have no inducement to exercise restraint. This could lead to a pair of problematic behaviors. First, because patrons could spend out the programs' funds quickly, several librarians have fretted that PDA will make budgeting generally unpredictable and sustainable budgeting difficult (Byström, Johansson, Perols, & Tengstam, 2012; Chan & Kendall, 2013; Crane & Snyder, 2013; De Fino & Lo, 2011; Garofalo, 2011; Hodges et al., 2010; Kelly, 2010; Lenares, 2011; Lenares & Delquié, 2010; Levine-Clark, 2010; Mays, 2012; Medeiros, 2011; Palmer, 2013; Pellack, 2005; Polanka & Delquié, 2011; Reiners et al., 2012; Reynolds et al., 2010; Sharp & Thompson, 2010; Shepherd & Langston, 2013; Steiner & Berry, 2011; Thompson, 2010; Walters, 2012; Ward, 2012; Way & Garrison, 2011). However, as Swords (2011) has noted, "The tales about tens of thousands of dollars being gobbled up in days or weeks ... came mostly from early experiments with models that were unsophisticated or unfinished" (p. 169). Still, concerns over acquisitions budgets and PDA have not entirely been put to rest. As Miller (2011) has remarked, libraries do not seem disposed to give over their entire book budgets to patron control. A recent survey found that academic libraries with PDA programs allocated just 1-5% of their book budgets to PDA (Lenares & Delquié, 2010). Therefore, despite the advocacy of an enthusiastic few, there is as yet no clear evidence of what would happen if academic library patrons were allowed to "run wild" with their libraries' book budgets.

That said, the literature on PDA and budgeting has grown somewhat more reassuring over the years, and some of the recent literature does seem very encouraging. Texas A&M University (TAMU) surveyed its librarians following a three-year run of its PDA program, and a majority of the librarians who responded to a question about funding shortages conceded that their fears had not been validated after the program's implementation (Reynolds et al. 2010). Similar findings have been reported elsewhere (Brown, 2007; Foss, 2007; Fyfe et al., 2012; Pellack, 2005; Sutton, 2003; Ward, 2002; Ward et al., 2003; Wiley & Clarage, 2012). Swords (2011) has asserted that a "strategically deployed PDA program" – specifically, a tailored e-book PDA program that considers the number of potential library patrons and the number of titles to which they have access and that uses free short-term browsing, pro-rated short-term loans, and a multiple-access-based purchase trigger – should be "predictable to within 5 percent – and often 1 percent – of the budget a library has in mind" (p. 179). Practical evidence from the field suggests that Swords may be correct. Dillon (2011b) reported on budgeting for the University of Texas, Austin's PDA program as follows: "Budgeting for our demand-driven acquisitions has been so predictable that it is boring" (p. 163).

Second, many librarians have tacitly or explicitly expressed a concern that patrons could spend more extravagantly on pricier titles than would librarians working to stretch their book budgets. Most librarians have or want PDA program price controls in place to prevent patrons from purchasing expensive titles, often with the expectation that such titles will have poor cost-per-use value (Duncan & Carroll, 2011; Fountain & Frederiksen, 2010; Garofalo, 2011; Osorio, 2011; Tyler, 2011; Tyler et al., 2011; Wexelbaum & Heinrich, 2011). The evidence in the literature seems to be consistently, although not entirely, favorable. Authors have reported on PDA books' costs and cost-per-use value relative to traditionally acquired books' and relative to ILL transaction costs. Many authors at academic libraries have reported average prices paid comparable to those of traditionally acquired books or to the costs of a few ILL transactions (Allen et al., 2003; Anderson et al., 2002; Badics, 2013; Bombeld & Hanerfeld, 2004; Bracke, 2010; Carrico & Leonard, 2011; Chan, 2004; Comer & Lorenzen, 2005, 2007; Coopey & Snowman, 2006; Crane, 2011; Currie & Graves, 2012; Davis, Jin, Neely, & Rykse, 2012; Dinkins, 2012,

2012-2013, Dooley, 2012; Elmore, 2012-2013; Fischer et al., 2012; Fyfe et al., 2012; Gibson & Kirkwood, 2009; Hardy & Davies, 2007; Herrera & Greenwood, 2011; Hruska, 2012; Hussong-Christian & Georgen-Doll, 2010; Kelly, 2010; Lupton, 2011; McCaslin, 2013; Nabe, Imre, & Mann, 2011; Paulson, 2011; Perdue & Van Fleet, 1999; Pitcher et al., 2010; Reed, 2004; Ruppel, 2006; Schmidt, 2012; Schroeder, 2012; Schroeder et al., 2010; Sharp & Thompson, 2010; Shen et al., 2011; Soma, 2010; Spitzform, 2011; Thomas, Racine, & Shouse, 2013; van Dyk, 2011; Ward, 2002, 2011; Ward et al., 2003; Wiley & Chrzastowski, 2010; Wiley & Clarage, 2012; Zopfi-Jordan, 2008). Of course, most of the programs reported on have had price caps in place, which surveys and reviews would suggest to be the standard practice (Duncan & Carroll, 2011; Lenares & Delquíé, 2010; Osorio, 2011; Tyler, 2011; Walters, 2012; Wexelbaum & Heinrich, 2011). These price limits have no doubt served to exclude many requested high-priced items and driven down the average price of purchased PDA items.

With respect to this last point, at least one study reported PDA books' average prices as being significantly higher than those for traditionally acquired books. However, the study noted that traditionally acquired books' prices benefited from a substantial vendor discount while the PDA books did not (Tyler et al., 2011). Similarly, one of the few studies to report PDA book costs as substantially higher than ILL costs also had local factors that influenced its results, for the study was of an international PDA program at the University of Hong Kong Libraries (Chan, 2004).

Concerning cost-per-use, academic librarians have speculated that PDA should show superior performance because the books are likely to be circulated at least once to their requesting patrons, whereas traditionally acquired books are less likely to circulate and items borrowed via ILL incur a cost with each transaction (Blackburn & Tiemeyer, 2013; Chan & Kendall, 2013; Dillon, 2011b; Huddy, 2012; Perdue & Van Fleet, 1999; Polanka & Delquíé, 2011; Schroeder et al., 2010; Ward, 2012). Authors from least two academic libraries have found that print PDA books' cost-per-use, as compared to traditionally acquired books', is equivalent or substantially better (Schroeder, 2012; Tyler et al., 2010; Tyler et al., 2011). Several studies of e-book PDA have produced fairly similar results (Elmore, 2012-2013; McCaslin, 2013; Thomas et al., 2013; Way & Garrison, 2011). One possible noteworthy exception

for e-book PDA has been reported from East Carolina University (ECU), where cost-per-use of firm ordered e-books from ebrary was approximately 80% of PDA books'. However, reported cost-per-use for EBSCOhost's firm ordered e-books from the same library were nearly twice PDA books', so ECU's results would seem to be decidedly mixed (Thomas et al., 2013). Another recent study, conducted by Dinkins (2012-2013) at Stetson University, compared two small subsets of the university's pool of e-books available for PDA, titles individually selected by librarians and by teaching faculty, and found that although the latter had slightly higher average prices, the teaching faculty's selections had lower cost-per-use averages. Thus, it would seem that, even prior to PDA items' first use, patrons as selectors, in this case teaching faculty, may have had a better sense for what other patrons will want to use comparatively heavily than did librarians.

The assumption that PDA cost-per-use is superior to ILL costs for print materials, however, has received cogent criticism from van Dyk (2011), who has demonstrated that, if one were to take into account all of the costs associated with purchasing, PDA books of average price would need to circulate at least four times and expensive items would need to circulate roughly six times before parity with average ILL borrowing costs would be reached. Chan (2004) found that the University of Hong Kong PDA program had a lower circulation threshold and better results than those modeled by van Dyk, but since Chan's program was international, it had high ILL costs. Domestically, Hussong-Christian and Goergen-Doll (2010) at Oregon State University reported costs-per-circulation that were just \$8.59 higher than local ILL costs, necessitating just 1.28 circulations to achieve parity. At a much smaller liberal arts institution, Saint Anselm's College, however, Waller (2013) found that PDA books "cost \$39.70 on average, while borrowing a book through ILL cost only \$6.18 on average" (p. 144). Thus, it would seem that the validity of van Dyk's critique, while possibly holding true for the average academic library, could be reduced or exaggerated by local factors at individual institutions. Certainly, van Dyk's criticisms warrant further study. With respect to e-book PDA, on the other hand, recent literature suggests that the costs should be well below the average costs of traditional ILL (Way & Garrison, 2011).

Critics and supporters have also remarked that PDA patrons generally request/purchase materials to meet particular and/or immediate individual needs and not to build collections for the future or to preserve the scholarly record (Tyler, 2011; Wood, 2013). One of the more frequently broached concerns in the literature has been that patrons will order inappropriate books (e.g., textbooks, books on unusual or unwanted subjects, or books for a popular or too narrow an audience) (Anderson et al., 2002, 2010; R. Anderson, 2011; Booth & O'Brien, 2011; Bracke, 2010; Comer & Lorenzen, 2007; Coopey & Snowman, 2006; Dahl, 2012; De Fino & Lo, 2011; Esposito, Walker, & Ehling, 2013; Fyfe et al., 2012; Hardy & Davies, 2007; Henri, 2012; Hodges et al., 2010; Hussong-Christian & Georgen-Doll, 2010; Kelly, 2010; Kuhn, 2004; Lenares, 2011; Lenares & Delquié, 2010; Lugg, 2011; McCaslin, 2013; Miller, 2011; Nixon et al., 2010; Osorio, 2011; Paulson, 2011; Polanka & Delquié, 2011; Price & McDonald, 2009; Reel & Conn, 2010; Reynolds et al., 2010; Rottmann, 1991; Ruppel, 2006; Schroeder & Wright, 2011; Sens & Fonseca, 2013; Shen et al., 2011; Sutton, 2003; Tyler et al., 2010, 2011; Walters, 2012; Ward, 2012; Way & Garrison, 2011; Wiersma & Fong, 2011; Zopfi-Jordan, 2008). This potential for filling the collection with inappropriate books could lead to additional problems. For example, books that are not of wide interest to the community served by the libraries in question could result in PDA books experiencing low or even no circulation (Comer & Lorenzen, 2007; Nixon & Saunders, 2010; Sens & Fonseca, 2013; Tyler et al., 2010, 2013a). Additionally, if PDA patrons' ordering practices consistently differ radically from librarians', PDA's purchasing of books to meet patrons' short-term needs could produce undesirable distortions in libraries' collections and leave them skewed or with gaps difficult to retrospectively fill (Anderson et al., 2010; R. Anderson, 2011; Chadwell, 2009; Comer & Lorenzen, 2007; Currie & Graves, 2012; De Fino & Lo, 2011; Duncan & Carroll, 2011; Fyfe et al., 2012; Henri, 2012; Herrera & Greenwood, 2011; Hodges et al., 2010; Hoseth & McLure, 2012; Hruska, 2012; Hussong-Christian & Georgen-Doll, 2010; Lenares, 2011; Lenares & Delquié, 2010; Nardini, 2011; Osorio, 2011; Palmer, 2013; Polanka & Delquié, 2011; Price & McDonald, 2009; Schroeder et al., 2010; Sens & Fonseca, 2013; Sharp & Thompson, 2010; Shen et al., 2011; Spitzform & Sennyey, 2007; Teaff, 2011; Tyler et al., 2013b; Walters, 2012; Way & Garrison, 2011).

The primary worry about inappropriate books has largely been answered in the existing body of literature. Authors have reported small numbers or percentages of their programs' requested or purchased items as being inappropriate to their libraries, with subject, Dewey call number or Library of Congress (LC) subclass, genre, readership-/content-level, publisher, or material type variously employed as criteria (Anderson et al., 2002, 2010; Blackburn & Tiemeyer, 2013; Booth & O'Brien, 2011; Bracke, 2010; Breitbach & Lambert, 2011; Brug & MacWaters, 2004; Chan, 2004; Comer & Lorenzen, 2005, 2007; Gee & Shirkey, 2010; Herrera & Greenwood, 2011; Hillen & Johnson-Grau, 2011; Hodges et al., 2010; Houle, 2004; Hussong-Christian & Georgen-Doll, 2010; McCaslin, 2013; Pitcher et al., 2010; Price & McDonald, 2009; Ruppel, 2006; Shen et al., 2011; Sutton, 2003; Ward, 2011; Wiersma & Fong, 2011; Wiley & Chrzastowski, 2010; Wiley & Clarage, 2012). However, librarians who have directly reviewed the requested or purchased items or who have reviewed requests by subject criteria, publisher, material type, readership-level, reviewers' recommendations, or against peer institutions' holdings, have found PDA items to largely have been worthy and appropriate purchases for their collections (Allen et al., 2003; Anderson et al., 2002, 2010; Badics, 2004; Booth & O'Brien, 2011; Bracke, 2010; Brown, 2007; Brug & MacWaters, 2004; Carrico & Leonard, 2011; Chan, 2004; Coopey & Snowman, 2006; Dooley, 2012; Duncan & Carroll, 2011; Gee & Shirkey, 2010; Hardy & Davies, 2007; Herrera & Greenwood, 2011; Hillen & Johnson-Grau, 2011; Hodges et al., 2010; Huddy, 2012; Reynolds et al., 2010; Ruppel, 2006; Shen et al., 2011; Soma, 2010; Sutton, 2003; Tyler et al., 2010; Ward, 2002; Ward et al., 2003; Way, 2009; Wiersma & Fong, 2011). The perhaps most widely referenced work in this area has come from Purdue University. In 2002, after two years of purchases via their Books on Demand program, Anderson et al. gathered together five subject bibliographers whose respective collections had experienced the greatest number of PDA acquisitions and asked them to review the purchases. Eighty to 99 % of the PDA purchases were books that the bibliographers would have willingly obtained for their subject areas, assuming sufficient funds. In 2010, the review was repeated, and 79-93% of the books were judged by the bibliographers to be in scope, depending upon the subject area. In the follow-up study, nearly 90% of the books also were found to have come from university or scholarly presses. The bibliographers also

noted that the program had added interdisciplinary works to the collection that they might have not have otherwise purchased. Librarians elsewhere have similarly praised PDA for its collection diversifying effects (Badics, 2012; Dillon, 2011a).

A potential counter to the literature's findings on appropriateness has, however, recently been published by Waller (2013), who found that nearly two-thirds of the books purchased via his college's PDA program were not owned by selected peer institutions and that less than 15% of the PDA purchases were owned by two or more peers. The PDA program that Waller reports on, however, is unusual in that it was available only to undergraduates. Thus, it is difficult to parse whether Waller's results support the contentions of PDA's more general critics or of those critics like Walter (2012) who have asserted merely that undergraduates should not be allowed to add books to academic libraries' collections.

Of all the concerns expressed over PDA's potential ill effects, the one that likely least needs to be addressed in the future would be that the books requested through PDA will fail to circulate. The most widely and consistently reported benefit of PDA programs has been that the books circulate quite a bit (Tyler 2011). The PDA literature that has reported on book circulation, or in the case of e-books on numbers or rates of patron access, has reported that the books see more circulation/use than their traditionally acquired counterparts, and articles that have reported on amounts or rates of multiple circulation/use have similarly reported high amounts of multiple circulations/accesses (Allen et al., 2003; Anderson et al., 2002; Blackburn & Tiemeyer, 2013; Bracke, 2010; Breitbach & Lambert, 2011; Brug & MacWaters, 2004; Carrico & Leonard, 2011; Chan & Kendall, 2013; Chan, 2004; Comer & Lorenzen, 2005; Crane, 2011; Currie & Graves, 2012; Davis et al., 2012; Dinkins, 2012; Elmore, 2012-2013; Fischer et al., 2012; Fyfe et al., 2012; Gibson & Kirkwood, 2009; Hardy & Davies, 2007; Hodges et al., 2010; Houle, 2004; Kelly, 2010; Lenares, 2011; Lorbeer, 2013; McCaslin, 2013; Nixon & Saunders, 2010; Perdue & Van Fleet, 1999; Price & McDonald, 2009; Pritchard, 1980; Reynolds et al., 2010; Schmidt, 2012; Schroeder, 2012; Soma, 2010; Spitzform, 2011; Sutton, 2003; Teaff, 2011; Thompson, 2010; Tyler et al., 2010, 2011, 2013a; Ward, 2002, 2011; Ward et al., 2003; Way, 2009; Way & Garrison, 2011; Wiley & Clarage, 2012).

Some of the more interesting analyses of PDA circulation data for print materials are from Purdue University. Researchers there found that PDA books not only had greater circulation on average than traditionally acquired books, but did so even with their initial circulations to their PDA requestors discounted. This circulation advantage persisted even after the books had spent roughly a decade in the collection. They also noted that PDA books have proportionally fewer uncirculated books (Nixon & Saunders, 2010). Some of the more analytical papers on this issue have come from UNL. Authors there have demonstrated that UNL's ILL PDA books generated greater circulation than traditionally acquired books by statistically significant amounts if one analyzed all acquired books from the period in question, all acquired books from the period in question that fell into only those Library of Congress (LC) subclasses that had had ILL PDA acquisitions, or only those books from the latter subset that had experienced at least one circulation (Tyler et al., 2010). In a follow-up study, UNL researchers showed that the ILL PDA books circulated more often than books purchased by librarians and books selected via approval plans by a statistically significant amount even if the ILL PDA books' first circulations were subtracted from the data. They also found, via multivariate regression analysis, that the potential interaction effects of control variables such as period of time owned, subject, and books' prices had little or no effect on this circulation advantage. Perhaps most encouraging for librarians, the authors also found that the books purchased by librarians had significantly higher circulation statistics than did the approval plan selections, even with the same set of control variables in place (Tyler et al., 2013a).

With respect to e-book PDA, in the aforementioned recent cross-selector study of PDA usage within an e-book PDA program at Stetson University, Dinkins (2012-2013) found that individual items selected for the e-book PDA pool by patrons, in this case teaching faculty, experienced more usage sessions per purchased item than did items selected for the PDA pool by librarians, although a slightly greater percentage of librarian-selected items were purchased via e-book PDA triggers. Thus, it would again seem that even when it comes to selecting items to be made available for PDA, at least some patron groups have a better sense of what other patrons will use comparatively heavily than do librarians, although the librarians did appear to have a somewhat better sense of what would get used at least once.

Waller's (2013) recent study of Saint Anselm's program, however, offers a possible caution to the literature's propitious circulation consensus. His study of PDA materials purchased by undergraduates, who were the program's only patrons, found the books' circulation advantage over traditionally-acquired books to be much less pronounced than has been reported elsewhere. Again, Waller's findings, especially when read in light of Dinkins's findings above, could be utilized as support for Walter's aforementioned assertion that undergraduates ought not to be allowed to purchase books for academic library collections and that PDA ought to be limited to faculty and graduate students. However, Walter's assertion, if it is supported by Waller's study, seems to be contradicted by the findings of Nixon and Saunders (2010) at Purdue University, who found that "[b]ooks requested by undergraduates had the highest average circulation, while those requested by faculty had the lowest" (p. 357). Presumably, the Purdue undergraduates' purchases met a greater number of patrons' needs than did the faculty purchases. Thus, it would be very appropriate to reflect, again, that institutions that serve different patron populations and/or that have different collecting priorities may have local, institutional factors that influence their programs' results, as Waller notes (2013).

Another recent study that could, at first glance, be taken as contradicting the general narrative concerning PDA books' circulation advantages was conducted by Mays (2013) at Winthrop University. Mays found that traditionally-acquired materials circulated more than did PDA materials, but, unfortunately, her analysis was clouded by its also comparing across formats: the traditionally-acquired materials were print books, while the PDA materials were e-books. Thus, as the author noted, differences in circulation may have been strongly reflective of disciplines' format preferences.

Whether PDA will unbalance or skew academic library collections over the long term is an issue that has garnered some recent attention in the literature. Unfortunately, it is difficult to offer a firm answer to this criticism. Firstly, PDA is still far from having achieved universal, or even widespread, adoption. In a recent report, Esposito, Walker, and Ehling estimated that just four hundred to six hundred programs were currently extant (Esposito et al., 2013). Recent histories of modern PDA programs note that early adopters of PDA programs are concentrated in Australia and New Zealand. Adoption rates may

be rising slightly in the U.S. and in the United Kingdom, but PDA appears to be taking hold much more slowly in the countries of Europe, with one or two exceptions (Paulson, 2011; Polanka & Delquié, 2011). Secondly, as surveys and reviews of the literature have noted, the bulk of programs cited in the literature have been pilots or in the planning stages (Duncan & Carroll, 2011; Fountain & Frederiksen, 2010; Lenares & Delquié, 2010; Osorio, 2011; Tafuri & Mays, 2011; Tyler, 2011; Wexelbaum & Heinrich, 2011). Despite having suggested that PDA had reached a tipping point in 2011 in U.S. academic research libraries, Walker conceded that “most U.S. academic libraries that are making use of the current PDA models began their programs since 2009” (p. 126). Thirdly, as was noted above, academic libraries with programs seem to be allocating just 1-5% of their book budgets to PDA (Lenares & Delquié, 2010). So, while researchers seem to be touting PDA aggressively, most academic libraries seem to have adopted PDA cautiously. Thus, the timeline for current PDA models, their limited adoption, and the proportionally small amounts that have been allocated to PDA make it impossible to reach a final conclusion as yet.

Since the bulk of PDA programs appear to be of recent vintage and of relatively small size, and since their long-term effects cannot yet be detailed with any real confidence, what little literature that exists that has attempted to address the issue of unbalanced collecting has, therefore, been devoted to examining whether there have been systematic differences between librarians’ and PDA patrons’ purchasing in the short term. In a recent presentation, Price and McDonald (2009) studied PDA patrons’ and librarians’ e-book purchasing at five libraries by discipline and by the most commonly purchased LC classes and found that user-selected collections were “no more narrow, skewed, or individually focused than those chosen by a pre-selection” and that “for most institutions in the study, the collecting pattern[s] of users mirrored those of [librarian] pre-selection” (p. 143). In another study, Shen and her co-authors (2011) studied patrons’ e-book PDA purchases during a three-month pilot program and seven subject librarians’ hypothetical post-pilot e-book purchases by content level, by cost, by subject area, and by purchased title. The authors found that 18.2% of titles (116 of 637) purchased by patrons were also selected by the librarians. When the title-by-title comparison was limited to the five subject areas where

the participating librarians had made selections, the overlap was 30%. This marked an improvement, but as Shen et al. understatedly put it, “The low number of shared selections was of particular interest” (p. 216). In keeping with Price and McDonald’s findings, Waller (2013) found the relative frequency of undergraduates’ PDA and faculty/librarian traditional acquisitions over a nine-year period to closely coincide, with a few exceptions, by LC class. Similarly, in a forthcoming article in *College & Research Libraries*, authors from UNL studied how well PDA patrons’ and librarians’ purchasing of print books by LC subclass correlated over a five-year interval, both in terms of numbers of titles purchased and of collection dollars spent. For either variable, most year-to-year comparisons correlated strongly, and PDA patron and librarian purchasing over the whole of the five-year period correlated very strongly (Tyler et al., 2013b). Lastly, several studies of e-book PDA purchasing have concluded that book purchasing by subject tended to be proportional to subjects’ representation in the e-book collections offered to patrons (McLure & Hoseth, 2012; Medeiros, 2012; Shepherd & Langston, 2013). A noteworthy exception to this possible trend has been reported by Shen et al. (2011), who reported that e-books in the arts and humanities were disproportionately purchased via the e-book PDA program at Sam Houston State University. Still, one could tentatively conclude, although the various authors did not, that collection skewing by an e-book PDA program might more likely result from the composition of the e-book collection on offer rather than from PDA patron behaviors.

PDA critics and proponents, as well as one or two disgruntled patrons, have expressed concern that patrons will order not just inappropriate materials, but also order materials for inappropriate purposes, such as for recreational reading, to check citations, etc (Hussong-Christian & Georgen-Doll, 2010; McCaslin, 2013; Reynolds et al., 2010; Rottmann, 1991; Sens & Fonseca, 2013). Articles in the general ILL literature have noted that academic library patrons, including faculty members, place requests for recreational reading material (Burchfield & Garewal, 2009). Librarians studying TAMU’s Suggest a Purchase PDA program found something similar. A solid majority of patrons (61%) when asked to explain why they had requested materials responded that “research not related to a course” was their motivation, but the second most frequent response (29.9%) was “recreation” (Reynolds et al., 2010).

A number of librarians have cautioned that highly motivated patrons could make excessive numbers of requests and abuse PDA services thereby (Comer & Lorenzen, 2005; Herrera & Greenwood, 2011; Hodges et al., 2010; Palmer, 2013; Rottmann, 1991; Sharp & Thompson, 2010; Shepherd & Langston, 2013; Tyler, 2011). The potential problem of excessive PDA requesting/purchasing by particular patrons has not received in-depth analysis in the library literature, but several authors have provided some rough data. Articles that have reported on rates of requests-per-patron for print materials have indicated that the average number of requests or purchases per patron was between one and three, and one to three uses/accesses-per-patron has also been reported as the average for e-book PDA (Allen et al., 2003; Anderson et al., 2002; Breitbach & Lambert, 2011; Coopey & Snowman, 2006; Crane, 2011; Gee & Shirkey, 2010; Hardy & Davies, 2007; Herrera & Greenwood, 2011; Houle, 2004; Hussong-Christian & Georgen-Doll, 2010; Kelly, 2010; Reynolds et al., 2010; Sridhar, 1983; Ward, 2002, 2011; Ward et al., 2003). Excessive requesting would not appear to be a problem where the average patron is concerned. However, several of these papers have also provided evidence that a small number or percentage of patrons have made what could be viewed as an excessive number of requests/purchases (Crane, 2011; Gee & Shirkey, 2010; Herrera & Greenwood, 2011; Houle, 2004; McCaslin, 2013; Reynolds et al., 2010; Shepherd & Langston, 2013; Sridhar, 1983; Ward, 2002, 2011; Ward et al., 2003). For example, Ward of Purdue University and Houle of McGill University have reported peak patrons having requested or received fifty-four and sixty-two books, respectively, via print PDA plans (Houle, 2004; Ward, 2011). The survey implemented by Reynold et al. (2010) of TAMU's Suggest a Purchase users revealed that five percent of users admitted to having use the service more than twenty-five times. Thus, excessive requesting has not been a problem for PDA programs, but the outlier patrons that librarians fear do exist.

Lastly, a few have expressed the concern that, after having received their books, PDA patrons could monopolize them through repeated circulations or multiple circulation renewals (Palmer, 2013; Sens & Fonseca, 2013; Tyler, 2011). When the UNL Libraries first piloted its ILL PDA program, a colleague raised concerns that patrons could potentially use the new service to build private collections by

checking their books out and then repeatedly renewing them. There may be legitimate cause for concern. Studies of print PDA plans have fairly consistently found that the majority of requestors/purchasers are graduate students and/or faculty members (Anderson et al., 2002, 2010; Bombeld & Hanerfeld, 2004; Foss, 2007; Gee & Shirkey, 2010; Hodges et al., 2010; Houle, 2004; Reynolds et al., 2010; Tyler et al., 2010; Ward, 2002; Way, 2009). That was certainly the case at the UNL Libraries, where 48.8% of books purchased through the PDA program were requested by graduate students, 25.2% percent were requested by faculty, and just 8.6% were requested by undergraduates (Tyler et al., 2010). Recent assessment of collection use at Cornell University discovered that graduate students and, especially, faculty tend to keep books out for lengthy periods of time, partly through exploiting longer loan periods, but also through renewing circulated books multiple times (Cornell University Library, 2010, pp. 20-21). So, it would seem that the majority of PDA books are being requested by the patrons most likely to monopolize them.

Unfortunately, there is a dearth of in-depth research into how print PDA books are used and/or circulated after purchase. Purdue University has suggested that the status of the requesting patrons may affect who subsequently checks out a PDA item: researchers there found that books requested by faculty members were more likely to be subsequently checked out by other faculty members, books requested by undergraduates were more likely to be subsequently checked out by undergraduates, and so forth (Nixon & Saunders, 2010). Price and McDonald's study of e-book PDA at several libraries found that the average number of unique users for user-selected e-books was 1.75 to 3.3 times higher than the average for librarian-selected e-books (Price & McDonald, 2009). Thus, it would seem that the PDA e-books in their study received not only greater amounts of multiple use than librarians' e-books, but were accessed by more unique users. So far as the authors have been able to determine, however, no one has investigated whether print PDA books tend to be monopolized more or less than do traditionally-acquired books. The authors hope that the study to follow will serve as a first step toward rectifying this lack in the library literature.

BACKGROUND

UNL, chartered in 1869, serves as the comprehensive public university for the State of Nebraska (Knoll, 1995; Manley, 1969). The UNL University Libraries initiated its ILL PDA program for print books at the beginning of the June 2003-June 2004 fiscal year (Tyler et al., 2010). As has generally been the case with the many similar programs that have appeared in the literature, the UNL Libraries allocated a small percentage of its book budget to the program and adopted guidelines to ensure that materials purchased through the program would be appropriate additions to the collection, which the library literature would suggest has been standard practice (Anderson et al., 2010; Badics, 2012, 2013; Crane & Snyder, 2013; Duncan & Carroll, 2011; Fountain & Frederiksen, 2010; Garofalo, 2011; Herrera & Greenwood, 2011; Lenares & Delquié, 2010; McLure & Hoseth, 2012; Nixon et al., 2010; Reiners et al., 2012; Shepherd & Langston, 2013; Tyler, 2011; Walters, 2012; Wexelbaum & Heinrich, 2011; Wiley & Clarage, 2012). After the program had run for five-and-a-half years, the authors collected data on the program's purchases and on traditionally-acquired books added to the circulating collection during the interval. Table 1 shows that the UNL Libraries added 69,941 books to its circulating collection during this period and that the great majority were acquired through approval plans and librarians' firm orders. On the date that the data were compiled, roughly 26.4% of the books had circulated but had not been renewed, and 27.5% had circulated and been renewed at least once. Books that had circulated but not been renewed that had been acquired through approval plans, librarians' orders, and ILL PDA, the order types of interest to this study, accounted for a little more than 25.5% of the period's acquisitions for the circulating collection (17,857 books). Books acquired via the three order types that had circulated and been renewed accounted for a little more than 26.7% of total acquisitions for the same (18,704 books). The newest acquisitions among the books in question had been available for one month, the books with the longest tenure had been available for sixty-eight months, and the average period of availability was just over forty months. The least-circulated circulated books had been checked out just once, the most-circulated book had circulated forty-nine times, and the average circulated book (i.e., mean book) had circulated about 2.26 times. Those books that had circulated and been renewed circulated a bit more on average (2.9 times). For the latter group, renewals ranged from one to fifty-five, with an average of 3.37.

Books from the other two order categories, Donor Bequests and Lost Book Replacement, will be omitted from the study because both order types differ fundamentally or functionally from the included types. Donor Bequests will be excluded because they tend to be expressive of donors' individual interests, rather than being purchases made to meet or anticipate patrons' needs, and also because they do not circulate much. Including Donor Bequests likely would have produced statistically significant results where none were truly present. Lost Book Replacement purchases were disallowed because they tend to be replacement copies of older books, rather than copies of recently published books such as the selected order types purchased. Also, it would not be possible for the authors to determine who had purchased all of the original, lost copies, so all replacement copies would have had to be treated as a separate class of Librarians' Orders, irrespective of who had selected or purchased the originals. Thus, for lost and replaced books, the selection agency expressed by initial and subsequent purchases would be undesirably conflated.

Table 1: UNL Libraries Acquisitions for the Circulating Collection 2003-04 to 2007-08: Purchases, Circulations, Renewals, Errors, and Totals (with row percentages)⁺					
<u>Purchaser/ Selector</u>	<u>Circulation Status</u>				<u>Total Purchases by Order Type</u>
	<u>Not Circulated</u>	<u>Circulated/ Not Renewed</u>	<u>Circulated & Renewed</u>	<u>Data Errors⁺⁺</u>	
Approval Plans	17,738 (48.4%)	9,594 (26.2%)	9,272 (25.3%)	18 (0.0%)	36,622 (100.0%)
Librarians' Orders	12,621 (43.6%)	7,646 (26.4%)	8,617 (29.8%)	31 (0.1%)	28,915 (100.0%)
ILL PDA	19 (1.3%)	617 (42.5%)	815 (56.2%)	0 (0.0%)	1,451 (100.0%)
Donor Bequests	1,383 (74.0%)	301 (16.1%)	185 (9.9%)	0 (0.0%)	1,869 (100.0%)
Lost Book Replacement	417 (38.5%)	334 (30.8%)	333 (30.7%)	0 (0.0%)	1,084 (100.0%)
Total Purchases by Circulation Status	32,178 (46.0%)	18,492 (26.4%)	19,222 (27.5%)	49 (0.0%)	69,941 (100.0%)
⁺ Displayed percentages rounded to the nearest 1/10 th					
⁺⁺ Books with recorded renewals but no recorded circulations					

Books from the UNL Libraries' collection circulate to undergraduate students, graduate students, faculty, staff members, and members of the community (i.e. alumni association members, reciprocal borrowers from other institutions, and Nebraska residents). Any of these classes of borrowers may renew books that they have checked out, and the total period that a book may be out of the library varies by patron status as follows:

- Undergraduate students: 28 day circulation, 12 renewals, 364 days total;
- Graduate students: 56 day circulation, 5 renewals, 336 days total;
- Faculty: 140 day circulation, 8 renewals, 1,260 days total;
- Staff: 56 day circulation, 5 renewals, 336 days total;
- Community members: 28 day circulation, 1 renewal, 56 days total (UNL Libraries, 2013).

These numbers demonstrate that the UNL Libraries' books have the potential to be monopolized through repeated renewals for lengthy periods. Additionally, the UNL Libraries does not always require faculty to return books that they are using for extended periods and instead asks them merely to confirm that books at the renewal limit have not been lost. If the books in question have not been lost, then faculty members are sometimes allowed to continue to renew them beyond the faculty limit (Michael Straatmann, Circulation Manager, UNL University Libraries, personal communication, September 15, 2013). Thus, it is not without reason that some librarians have feared that patrons could be exploiting their libraries' PDA programs to effectively build private libraries through the monopolization of PDA books.

METHODOLOGY

As was stated above, PDA patrons could potentially monopolize books through repeated circulations or through circulations and repeated renewals. The UNL Libraries' handling of patron privacy, as was noted above, renders the first avenue for monopolization difficult to study. For the same reason, whether individual PDA patrons have checked out and then repeatedly renewed their requested books cannot easily be determined within the bounds of library policy. The circulation and renewal data

of the books themselves, however, can easily be collected from the books' records. Therefore, the following study will attempt to determine if the UNL Libraries' PDA books show evidence that they have been monopolized through excessive renewals as compared to traditionally acquired books.

The concern over the books' possible monopolization and the approach adopted by this study suggest five research questions that could reveal evidence that the ILL PDA books differ from traditionally-acquired books in regard to circulations and renewals:

- 1) Is the balance of books that were circulated but not renewed and of books that were circulated and renewed different for PDA and traditional means of acquisition?
- 2) Is the ratio of renewals per circulation different for PDA books?
- 3) Is the ratio of renewals per circulation different for PDA books during their first year of availability?
- 4) Is the ratio of renewals per circulation different for PDA books after their first year of availability?
- 5) Did PDA books that circulated just once and were then renewed incur more renewals than did similar traditionally-acquired books?

To assess whether the ILL PDA books showed a tendency to circulate and be renewed more than did traditionally-acquired books, the authors subjected the UNL Libraries' circulated but not renewed books and those that were circulated and renewed to a Pearson's Chi-Square Test, to determine whether order type skews books' circulation and renewal patterns.

To assess whether the ILL PDA books exhibited higher ratios of renewals-to-circulation than did the traditionally-acquired books, the authors subjected the ratios to a series of four Kruskal-Wallis one-way analysis of variance tests (K-W Test), with post-hoc pairwise comparisons to pinpoint significant differences between individual order types if the K-W Tests indicated a significant difference was present. The K-W Test, rather than the single-factor two-way analysis of variance (ANOVA), was employed for research questions two through five because the distributions of the ratios of the three order types, while similar, were decidedly not normal and because the distributions were largely comprised of

tied values, as one might expect from datasets produced from the division of limited ranges of integers. Under the circumstances, it was more appropriate to employ a nonparametric test with an adjustment of probability values for ties rather than the more powerful and popular ANOVA (Gravetter & Wallnau, 2009).

RESULTS & ANALYSIS

To determine whether circulated ILL PDA books tended more toward being renewed than did circulated approval plan books or books ordered by librarians, the authors subjected the three book-order types' circulated-but-not-renewed and circulated-and-renewed books to a chi-square test. The test discovered a statistically significant difference among the order types, and the circulated ILL PDA books demonstrated a greater likelihood of being renewed (see Table 2). One of the weaknesses of the chi-square test, however, is its sensitivity to large samples (Healey, 2009, pp. 274-275). The "sample" for this study ($N = 36,561$) is rather large, so the authors elected to calculate a post-test measure of association, Cramér's V , for the table. The post-test measure showed that the actual association was weak. Therefore, it may be that the statistically significant result is at least in part the product of sample size. Thus, circulated ILL PDA books may tend more toward renewal than do circulated approval plan books, and possibly librarian-ordered books, but the value for Cramér's V would suggest that the association by order type is likely trivial.

**Table 2: Circulated and Circulated-and-Renewed Books by Order Type:
Pearson's Chi-Square Test (χ^2)⁺**

<u>Purchaser/ Selector</u>	<u>Circulated</u>	<u>Circulated-and- Renewed</u>	<u>Row Totals</u>
	9,594	9,272	18,866
Approval Plan	(50.9%)	(49.1%)	(100.0%)
	7,646	8,617	16,263
Librarians' Orders	(47.0%)	(53.0%)	(100.0%)
	617	815	1,432
ILL PDA	(43.1%)	(56.9%)	(100.0%)
Column	17,857	18,704	36,561
Totals	(48.8%)	(51.2%)	(100.0%)
N = 36,561 df = 2 $\chi^2 = 71.2635^{***}$ Cramér's V = 0.044			
+ Displayed percentages rounded to the nearest 1/10 th *** p < 0.001			

The above showed that the circulated ILL PDA books show a significantly greater propensity toward being renewed, with the caveat that the association by order type is weak, but the test above did not address the study's core question: do ILL PDA book show evidence of being monopolized through significantly greater circulation renewals? If it were the case that the ILL PDA books were being monopolized through excessive renewals, one would expect that they would show not only a propensity toward being renewed, but that the number of renewals would tend to exceed the number of circulations. Therefore, for the ILL PDA books to be considered monopolized, the ratios of renewals-to-circulations for these books should be consistently higher than those of books acquired in a more traditional manner. To test this possibility, the authors performed a K-W Test of the rank-ordered renewal-to-circulation ratios of the three order types' circulated-and-renewed books, with an adjustment for the ties in the data. This subset of the data comprises roughly 26.7% of the books that had been added to the circulating

collection during the period, 49.6% of all circulated books in the parent dataset, and 97.3% of all circulated-and-renewed books in the dataset.

Table 3: Renewal to Circulation Ratios: Circulated-and-Renewed Books

<u>Order Type</u>	<u>n</u>	<u>Mean Rank</u>
Approval Plans	9,272	9,657.62
Librarians' Orders	8,617	9,086.64
ILL PDA	815	8,692.18
N =	18,704	

Kruskal-Wallis Test

Chi-square (adjusted for ties)	63.908
Degrees of Freedom	2
Asymptotic Significance	< 0.001

Post-Test Pairwise Comparisons

<u>Comparison</u>	<u>Test Statistic</u>	<u>Standard Error</u>	<u>Standard Test Statistic</u>	<u>Significance</u>	<u>Adjusted Significance</u>
ILL PDA vs. Librarians' Orders	394.464	195.980	2.013	0.044	0.132
ILL PDA vs. Approval Plans	965.446	195.381	4.941	< 0.001	< 0.001
Librarians' Orders vs. Approval Plans	570.982	80.019	7.136	< 0.001	< 0.001

Note: Each pairwise comparison tests the null hypothesis that the two comparison samples are the same.
Minimum significance level is $p \leq 0.05$

Table 3 shows that there was at least one statistically significant difference among the order types. However, the post-test pairwise comparisons surprisingly showed that it was the approval plan books that exhibited higher renewal-to-circulation ratios than did either the ILL PDA or the librarian-ordered books. Thus, the circulated ILL PDA books may have a greater propensity toward being renewed, but the approval plans' circulated-and-renewed books appear to be renewed more and circulated less than do the corresponding books of the other order types.

With the approval plan books identified as the primary culprit among the recently acquired books, the three K-W Tests to follow represent the authors' attempts to discover in the data likely subsets wherein the records of the ILL PDA books would show at least some evidence of their having been

monopolized by patrons via comparatively excessive rates of circulation renewal. One such subset that seemed promising was the subset of books that were available for a year or less. It would seem plausible that PDA patrons would monopolize their books after receipt since they had presumably requested them to meet actual research needs, whereas the librarians' and approval plans' books would exhibit more normal circulation and renewal patterns since they were purchased to anticipate potential research needs.

**Table 4: Renewal to Circulation Ratios:
Circulated-and-Renewed Books Available for One Year or Less**

<u>Order Type</u>	<u>n</u>	<u>Mean Rank</u>
Approval Plans	435	376.25
Librarians' Orders	281	365.07
ILL PDA	32	433.53
N =	748	
<u>Kruskal-Wallis Test</u>		
Chi-square		
(adjusted for ties)	3.190	
Degrees of Freedom	2	
Asymptotic Significance	0.203	

Note: Minimum significance level is $p \leq 0.05$

Table 4 shows that the ILL PDA books exhibited higher renewal-to-circulation ratios, but they were not significantly so. It might be worthwhile to note that even if they had, doing so would hardly have created a noticeable problem in the collection. The newly-acquired circulated-and-renewed books of the three order types collectively amounted to just 1.07% of the 69,941 books acquired for the circulating collection during the period, and the thirty-two ILL PDA books of this subset amount to a mere 0.00046% of the period's total acquisitions.

**Table 5: Renewal to Circulation Ratios:
Circulated-and-Renewed Books Available for More Than One Year**

<u>Order Type</u>	<u>n</u>	<u>Mean Rank</u>
Approval Plans	8,837	9,275.46
Librarians' Orders	8,336	8,729.65
ILL PDA	783	8,276.31
N =	17,956	

<u>Kruskal-Wallis Test</u>					
Chi-square					
(adjusted for ties)	63.720				
Degrees of Freedom	2				
Asymptotic Significance	< 0.001				

<u>Post-Test Pairwise Comparisons</u>					
<u>Comparison</u>	<u>Test</u>	<u>Standard</u>	<u>Test</u>	<u>Significance</u>	<u>Adjusted</u>
	<u>Statistic</u>	<u>Error</u>	<u>Statistic</u>		<u>Significance</u>
ILL PDA vs. Librarians' Orders	453.339	192.015	2.361	0.018	0.055
ILL PDA vs. Approval Plans	999.149	191.547	5.216	< 0.001	< 0.001
Librarians' Orders vs. Approval Plans	545.810	78.436	6.959	< 0.001	< 0.001

Note: Each pairwise comparison tests the null hypothesis that the two comparison samples are the same. Minimum significance level is $p \leq 0.05$

One could plausibly speculate that if the patrons circulating and renewing ILL PDA books were to continue to exhibit the behavior discovered above, the order types could diverge over the longer term, and then the ILL PDA books would exhibit more greatly skewed ratios, as compared to the traditionally-acquired books' more balanced renewal to circulation ratios. As Table 5 shows, a K-W Test of the renewal-to-circulation ratios of the circulated-and-renewed books that were available for more than one year actually uncovered the opposite outcome. The test discovered a significant difference, but it was the ILL PDA books' ratios that were significantly lower than the approval plan books'. After making the adjustment for ties in the data, the ILL PDA books' ratios were also almost significantly lower than those for books ordered by librarians, as well. Over the longer term, the potential imbalance in renewals and

circulations found in Table 4 actually reversed somewhat, and patrons of ILL PDA books wound up engaging in less effective monopolization of their books.

**Table 6: Renewal to Circulation Ratios:
Circulated-and-Renewed Books with a Single Circulation**

<u>Order Type</u>	<u>n</u>	<u>Mean Rank</u>			
Approval Plans	3,246	2,904.08			
Librarians' Orders	2,506	2,958.73			
ILL PDA	118	3,306.46			
N =	5,870				
<u>Kruskal-Wallis Test</u>					
Chi-square					
(adjusted for ties)	8.330				
Degrees of Freedom	2				
Asymptotic Significance	0.016				
<u>Post-Test Pairwise Comparisons</u>					
	Test	Standard			
<u>Comparison</u>	<u>Statistic</u>	<u>Error</u>	<u>Test</u>	<u>Significance</u>	<u>Adjusted</u>
Approval Plans vs.	-54.657	42.017	-1.301	0.193	0.580
Librarians' Orders					
Approval Plans vs.	-402.385	148.079	-2.717	0.007	0.020
ILL PDA					
Librarians' Orders vs.	-347.728	148.844	-2.336	0.019	0.058
ILL PDA					

Note: Each pairwise comparison tests the null hypothesis that the two comparison samples are the same. Minimum significance level is $p \leq 0.05$

In a final attempt to uncover evidence that some subset of the ILL PDA books were effectively monopolized more than were their traditionally-acquired counterparts, the authors assembled a subset from all three order types of circulated-and-renewed books with just a single circulation. These books would best meet our colleague's proposed criteria for monopolization: they were checked out just once to a single patron and then renewed once or more. Books fitting this subset's criteria amounted to 8.4% of the acquired books, and as Table 6 shows, the K-W Test did discover at least one statistically significant difference in the data. As the post-test pairwise comparisons show, among the more truly monopolized books, the ILL PDA books' circulation records did exhibit evidence of the worrisome behavior. In the post-test comparisons, after adjustment for ties, the ILL PDA books with a single circulation and one or

more renewals experienced significantly more renewals per book than did the approval plan books, and they experienced more renewals by a nearly significant amount than did books ordered by librarians. It may be worth noting, though, that the ILL PDA books amounted to just two percent of the books in this subset and to just 0.0017% of the total circulating books acquired during the period. If monopolistic use at this level would be a cause for concern at a large academic library, the authors would be quite surprised.

LIMITATIONS TO THE STUDY

Firstly, as with any single-site study, there is the question of whether the reported results are generalizable. Certainly, there could be institutional factors that may have affected the results reported here. Institutions with different collection usage patterns or different circulation and renewal policies may experience different results.

Secondly, as was noted at the outset of the article, because of UNL Libraries policy the study must be blind to the other likely form of monopolization: monopolization through repeated circulations by a single patron. The UNL Libraries' policies on patron privacy render this sort of monopolization difficult, if not impossible, to study. Librarians at institutions with more relaxed policies may have a better opportunity to study this possible patron behavior.

Thirdly, there is the issue of "sample" size. As was noted above, a recent survey found academic libraries with PDA programs to be allocating just 1-5% of their book budgets to PDA. Such was the case with UNL over the period in question in this study. As a result, although the three "samples" analyzed herein would usually qualify as large samples, the numbers for approval plan selections and librarians' firm orders dwarfed those for ILL PDA. For research purposes, it would, of course, be preferable if the numbers for PDA acquisitions could be more comparable to those for traditional acquisition methods. A not infrequent question raised concerning PDA programs has been whether the benefits and outcomes reported in the literature would persist if PDA programs were greatly expanded (Anderson et al., 2010;

Nixon & Saunders, 2010; Tyler et al., 2010). As things stand with the completion of this study, the question of whether PDA's benefits are scalable must remain unaddressed.

Lastly, there is the question of whether the problem of monopolization identified by the colleague that served as the impetus for this study is actually a problem. As was noted above, graduate students and faculty have been the majority users of PDA services. One might expect such researchers to perform more in-depth research or to perform research on more esoteric or abstruse subjects. Thus, one would expect PDA patrons to keep their books out for longer periods of time simply because of the nature of their studies and expect for their books to meet the needs of a very small subset of an academic library's pool of potential patrons. Thus, what had been suggested as a problem may, in point of fact, actually be appropriate patron behavior, and PDA's critics may have misframed this part of the debate on PDA as an effective collection development tool.

CONCLUSION

With the study's limitations and the study's definition of "monopolized" in mind, the authors incline toward the conclusion that monopolistic use of print PDA books should not be of great concern to academic libraries, assuming that the results reported here can be replicated elsewhere. Unusual, monopolistic use may exist somewhere in an academic library's collection, but it does not appear to be too common or widespread at UNL. In the UNL Libraries, monopolization via circulation renewals seems to exist primarily among approval plan books. To a much less troubling extent, it would also appear to exist in a very small subset of the ILL PDA books. Given that PDA books typically make up a small percentage of academic libraries' acquisitions, given that most prior circulation studies have found that PDA books circulate significantly more than do traditionally-acquired books, and given that PDA books generally do not appear to be repeatedly renewed any more than do traditionally-acquired books, the authors conclude there is little cause for concern. At the UNL Libraries, at least, there is no truly significant evidence as yet that patrons have been abusing PDA to build themselves their own private collections.

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